

CLAIMS

What is Claimed is:

1. A cardiac stimulation system for implantation in a patient, the cardiac stimulation system comprising:
 - first and second electrodes configured for positioning in a bifocal arrangement within a right ventricle;
 - a first lead system adapted for carrying the first and second electrodes at generally opposite sides of the right ventricle;
 - a third electrode adapted for positioning outside the right ventricle;
 - a power supply; and
 - a controller coupled to the power supply and operative to activate the first, second and third electrodes to deliver pulse therapy to the heart according to predetermined criteria.
2. A cardiac stimulation system according to claim 1 wherein:
 - the first electrode is adapted for disposition in the posterior high basal region of the right ventricle proximate the septum, and the second electrode is adapted for disposition in the anterior high basal region of the right ventricle proximate the septum.
3. A cardiac stimulation system according to claim 1 wherein:
 - the power supply and the controller are housed in a metallic housing, and the third electrode comprises the metallic housing.
4. A cardiac stimulation system according to claim 1 wherein:
 - the third electrode is disposed in the right atrium.
5. A cardiac stimulation system according to claim 1 wherein:
 - the third electrode is disposed in the left ventricle.

6. A cardiac stimulation system according to claim 1 wherein:
the first lead system comprises a single pre-formed lead.
7. A cardiac stimulation system according to claim 1 wherein:
the first lead system comprises a pair of leads, each lead
adapted for carrying one of the first and second electrodes.
8. A cardiac stimulation system according to claim 1 wherein at
least one of the first and second electrodes comprises an electrode from
the group comprising a tip electrode, a bipolar electrode, and a coil
electrode.
9. A cardiac stimulation system for implantation in a patient to
stimulate the patient's heart, the cardiac stimulation system comprising:
means for generating bifocal stimulation pulses;
means for carrying the means for generating in the right
ventricle;
a third electrode adapted for positioning outside the right
ventricle;
a power supply; and
a controller coupled to the power supply and operative to
activate the first, second and third electrodes to deliver pulse therapy to
the heart according to predetermined criteria.
10. A cardiac stimulation system according to claim 9 wherein
the means for generating comprises:
first and second electrodes configured for positioning in a
bifocal arrangement.
11. A cardiac stimulation system according to claim 10 wherein
the means for carrying comprises:
a first lead system adapted for carrying the first and second
electrodes in the right ventricle in accordance with the bifocal

arrangement and along the high basal region of the heart proximate the septum.

12. A ventricular defibrillation system for implantation in a patient, the ventricular fibrillation system comprising:

first and second electrodes configured for positioning in a bifocal arrangement;

a first lead system adapted for carrying the first and second electrodes in the right ventricle and at generally opposite sides of the right ventricle;

a power supply; and

a controller coupled to the power supply and operative to control the power supply to deliver antitachycardia therapy between the first and second electrodes.

13. A ventricular defibrillation system according to claim 12 and further including:

a third electrode adapted for positioning outside the right ventricle.

14. A ventricular defibrillation system according to claim 12 wherein:

the first lead system is adapted for carrying the first and second electrodes in the right ventricle in accordance with the bifocal arrangement and along the high basal region of the heart proximate the septum.

15. A ventricular defibrillation system according to claim 12 wherein:

the first lead system comprises a single pre-formed lead.

16. A ventricular defibrillation system according to claim 12 wherein:

the first lead system comprises a pair of leads, each lead adapted for carrying one of the first and second electrodes.

17. A ventricular defibrillation system according to claim 12 wherein:

the first and second electrodes comprise coil electrodes.

18. A method of defibrillating a patient's heart by an implantable cardiac stimulation system, the implantable cardiac stimulation system having a controller encased in a metallic housing and a pair of spaced apart electrodes disposed in the right ventricle on generally opposite sides of the right ventricle, the method comprising:

detecting ventricular fibrillation; and

delivering at least one electrical pulse between the pair of electrodes within the right ventricle.

19. A method of defibrillating a patient's heart according to claim 18 and further comprising:

determining the effectiveness of the at least one electrical pulse in terminating the ventricular fibrillation; and

delivering a second electrical pulse from between at least one of the pair of electrodes and the metallic housing if the first pulse is ineffective.

20. A method of defibrillating a patient's heart according to claim 19 and further comprising:
determining the effectiveness of the second electrical pulse in terminating the ventricular fibrillation; and
delivering a third electrical pulse from between at least one of the pair of electrodes and the metallic housing if the second pulse is ineffective.

21. A method according to claim 18 wherein:
the first electrical pulse comprises a biphasic waveform having respective first positive and first negative components.

22. A method according to claim 19 wherein the cardiac stimulation system further comprises a left ventricular electrode, and wherein delivering a second electrical pulse comprises:
delivering a second electrical pulse between at least one of the pair of electrodes and the left ventricular electrode.

23. A method of stimulating a patient's heart by an implantable cardiac stimulation system, the implantable cardiac stimulation system having a controller encased in a metallic housing and a pair of spaced-apart electrodes disposed in the high basal region of the right ventricle on opposite sides of the ventricle, the method comprising:
detecting an arrhythmia;
selecting an appropriate pulse therapy; and
delivering at least one electrical pulse between the pair of spaced-apart electrodes.

24. A method according to claim 23 and further comprising:
determining the effectiveness of the first electrical pulse in terminating the arrhythmia; and
delivering a second electrical pulse from between the other of the pair of electrodes and the third electrode if the first pulse is ineffective.

25. A method according to claim 23 wherein selecting an appropriate pulse therapy comprises:
selecting an anti-tachycardia pacing therapy for generating electrical pulses in the range of 0 to 10 volts.

26. A method according to claim 23 wherein selecting an appropriate therapy comprises:
selecting an atrial cardioversion pulse therapy for generating electrical pulses in the range of 10 to 400 volts.

27. A method according to claim 23 wherein selecting an appropriate therapy comprises:
selecting a ventricular defibrillation pulse therapy for generating electrical pulses in the range of 400 to 800 volts.

28. A method according to claim 23 wherein selecting an appropriate therapy comprises:
selecting a heart failure pulse therapy.

29. A method of cardioverting the atria by an implantable system, the implantable system having a controller and a pair of right ventricular electrodes disposed in a bifocal arrangement in the high basal region of the right ventricle proximate the septum and at opposing anterior and posterior sides, the implantable system further comprising a third electrode disposed in the right atrium, the method comprising the steps:

detecting an atrial arrhythmia; and
delivering a first electrical pulse between the third electrode and at least one of the right ventricular electrodes.

30. A method according to claim 29 and further comprising:
determining the effectiveness of the first electrical pulse in terminating the atrial arrhythmia; and
delivering a second electrical pulse between the third electrode and the other of the pair of electrodes if the first pulse is ineffective.